| L1 | 100 | (US-20040267760-$ or US-20060167867-$ or US-20070185845-$ or US-20050055336-$ or US-20010037345-$ or US-20070050347-$ or US-20040060006-$ or US-20040068487-$ or US-20040103105-$ or US-20040193607-$ or US-20050004892-$ or US-20050097084-$ or US-20050289175-$ or US-20060031233-$ or US-20060036935-$ or US-20060224576-$ or US-20060242563-$ or US-20070016604-$ or US-20070083809-$ or US-20070174242-$ or US-20070208723-$ or US-20070233645-$ or US-20070250471-$ or US-20050131906-$ or US-20020147771-$ or US-20050102256-$).did. or (US-20060161525-$ or US-20070043696-$ or US-20040205082-$ or US-20020097278-$ or US-20050055338-$ or US-20070276787-$ or US-20060235840-$ or US-20060206466-$ or US-20070027849-$ or US-20060095456-$ or US-20070112813-$ or US-20060064424-$ or US-20010044794-$ or US-20020120598-$ or US-20020156811-$ or US-20020198874-$ or US-20030018620-$ or US-20030018646-$ or US-20030065874-$ or US-20030140068-$ or US-20030177443-$ or US-20030212664-$ or US-20040083209-$ or US-20040088320-$ or US-20040148287-$ or US-20040172387-$ or US-20050033733-$).did. or (US-20050086584-$ or US-20050091188-$ or US-20050149503-$ or US-20050177560-$ or US-20050187912-$ or US-20050198055-$ or | US-PGPUB; USPAT | OR | OFF | 2008/01/29 14:05 |

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S88	1	10/601445	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2008/01/28 17:11
S3	4	("20020133497" "20030140034"). pn.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2008/01/28 17:10
S87	13	("6725212").URPN.	USPAT	OR	OFF	2008/01/28 16:47
S86	21	S85 and (707/3 or 707/100 or 707/1 or 707/200)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2008/01/28 12:55
S85	87	Shanmugasundaram.in.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2008/01/28 12:55
S80	63	S77 and (707/3 or 707/100 or 707/1 or 707/200)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2008/01/28 12:55
S72	44	S71 not((microsoft).as.)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2008/01/28 12:54
S84	3	09/921446	US-PGPUB; USPAT	OR	OFF	2008/01/28 12:43
S68	14	(US-20040267760-$ or US-20020133497-$ or US-20030140034-$).did. or (US-7146352-$ or US-7028037-$ or US-7016915-$ or US-6601058-$ or US-6654734-$ or US-6799184-$ or US-6901410-$ or US-6934712-$ or US-6947945-$ or US-7120645-$ or US-6725212-$).did.	US-PGPUB; USPAT	OR	OFF	2008/01/28 12:43

S81	12	S80 and (tuple or graph)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2008/01/28 12:23
S48	110	(S46 or S47) and (707/3 or 707/100 or 707/1 or 707/200)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2008/01/28 12:23
S77	74	("5873080").URPN.	USPAT	OR	OFF	2008/01/28 12:22
S76	6	("5873080" "6795832" "6697799"). pn.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2008/01/28 12:20
S75	1	10/601730	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2008/01/28 12:19
S73	50	((query adj (intermediate or independent) adj language) or QIL)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2008/01/28 12:18
S71	50	((query adj intermediate adj language) or QIL)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2008/01/28 12:16
S70	10	S68 and graph	US-PGPUB; USPAT	OR	OFF	2008/01/28 12:12
S69	5	S68 and tuple	US-PGPUB; USPAT	OR	OFF	2008/01/28 12:11
S67	2	"10/066124"	US-PGPUB; USPAT	OR	ON	2008/01/28 11:30
S66	2	"10/293490"	US-PGPUB; USPAT	OR	ON	2008/01/28 11:30
S64	2	("09819180" "10293490" "10066124")	US-PGPUB; USPAT	OR	ON	2008/01/28 11:30

S63	5	("11328664" "10937641" "09879180" "10270705" "10655126" "10293490" "10066124")	US-PGPUB; USPAT	OR	ON	2008/01/28 11:29

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Title
Relational databases for querying **XML documents:** limitations and opportunities.

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Abstract
XML is fast emerging as the dominant standard for representing data in the World Wide Web. Sophisticated query engines that allow users to effectively tap the data stored in **XML documents** will be crucial to exploiting the full power of **XML.** While there has been a great deal of activity recently proposing new semi-structured data models and query languages for this purpose, this paper explores the more conservative approach of using traditional relational database engines for processing **XML documents** conforming to document type descriptors (DTD) . To this end, we have developed algorithms and implemented a prototype system that converts **XML documents** to relational **tuples,** translates semi-structured queries over **XML documents** to SQL queries over tables, and converts the results to **XML.** We have qualitatively evaluated this approach using several real DTD drawn from diverse domains. It turns out that the relational approach can handle most (but not all) of the semantics of semi-structured queries over **XML** data, but is likely to be effective only in some cases. We identify the causes for these limitations and propose certain extensions to the relational model that would make it more appropriate for processing queries over **XML documents.**

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